



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:

SHREERAM V. DESHPANDE

Serial No. : 10/062,790

Filed: 02/01/2002

ANTI-REFLECTIVE COATING  
COMPOSITIONS FOR ADVANCED  
MICROLITHOGRAPHY

Docket No. 31937

Group Art Unit No. 1752

Examiner: Rosemary E. Ashton

RECEIVED  
NOV 07 2003  
TC 1700

Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. §1.131

1. I, the inventor named in the above-referenced patent application, make this declaration to establish actual reduction to practice, in the United States, of the invention claimed in the above-referenced patent application at a date prior to June 5, 2001. U.S. Patent Application No. 09/874,783 by Puligadda et al., which was cited by the examiner in the first office action of the above-referenced patent application, was filed on June 5, 2001.

2. Photocopies of two pages from a lab notebook are attached as Exhibit A. Notebook page 74 of Exhibit A describes the preparation of a polymer where epoxy cresol novolac resin is reacted with hydroxy benzoic acid. This is very similar to the reaction shown on page 9, lines 11-14 of the specification, except that hydroxy benzoic acid is utilized rather than trimellitic anhydride. The structure of the resulting polymer (as shown on notebook page 74 of Exhibit A) is within the scope of the structural formula recited in independent claims 7, 18, and 27. This method of polymer preparation is also within the scope of the polymer preparation method claimed in independent claim

39. Notebook page 75 of Exhibit A demonstrates how this polymer was then utilized to formulate an anti-reflective coating composition according to the invention.

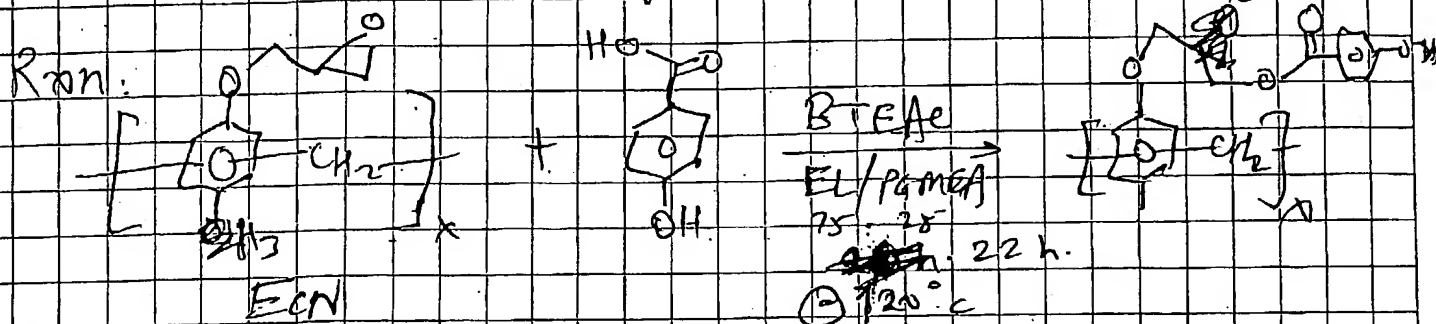
4. The dates on Exhibit A have been blocked out. However, I declare that these dates show I invented the claimed subject matter prior to June 5, 2001.

5. I further declare that all statements made herein of my own knowledge are true and that statements made herein on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this Declaration is directed.

\_\_\_\_\_  
Shreeram V. Deshpande

\_\_\_\_\_  
Date

Aim: To graft hydroxy-benzoic acid to ECN  
thru epoxy groups



Material	Mol. Wt. g/mol	Amount	Mols.	Eq. wt.
ECN	170.11 (per repeat unit)	10 g	0.056	1
hydroxy benzoic acid	138.12	5.1 g	0.037	0.65
BTEAC		0.1 g <del>1.1 g</del>	<del>21.1</del>	1% by wt. of polymer
<del>EL/PMEA</del>		100 g		
EL/PMEA 75 25				

After 22 hour reaction mixture obtained 108.45 g. of ~~for~~ reaction  
~ 13.9% solids



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Date

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Date

Formulation :

~~2.5 g of Triethyl ether~~

SD 2226-84-1

~~7.5 g of solids~~

53 g. of (15% solids ML)

3 g of Triethyl ether crosslinker

165.88 g. of EL/PGMEA  
75 25~~~ 5% solids formulation - stripped~~

O.D. 13.74/μ

50% stripping

Coat quality - good

SD 2226-84-2

53 g. of (15% solids ML)

3 g. of Powderlink

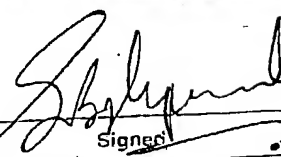
0.3 g. of P-TSA

165.88 g. of EL/PGMEA  
75 25~~50% stripping~~ No stripping

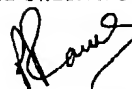
O.D. - 13.56/μ

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Date


  
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Date

Date